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A Study On 'Problems Obstructing The Effective Teaching Of Biology In Secondary Schools'

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Abstract
The purpose of the study is to examine the problems hindering the effective teaching and learning of biology in Secondary Schools of Andhra Pradesh. The study intend to determine the extent to which lack of qualified and experienced teachers affect the teaching and learning of biology in Secondary schools, the extent to which lack of educational materials and instructional materials affect the teaching and learning of biology, the extent to which lack of conducive learning environments affect the teaching and learning of biology, the extent to which large loaded syllabus affect the teaching and learning of biology, and the extent to which family background affect the teaching and learning of biology. The result from the analysis showed that, the use of unqualified and inexperienced teachers will make teaching ineffective, the non-availability and lack of instructional materials in these schools makes learning difficult, improper selection of available textbooks, visual and audio-visual aids will affect the teaching and learning of biology. It also revealed that the extent of use of instructional material for effective teaching and learning of biology is very low. Also, the family background of a student plays a huge role in his/her academic, overloaded syllabus, large class size all affect the teaching and learning of biology.

Key Words: biology, classroom, learning, resources, secondary schools, syllabus, teaching.

Introduction

A study on the problems obstructing effective teaching of biology in secondary schools reveals challenges like inadequate resources, insufficient teacher training, and student disengagement. These problems hinder the ability of teachers to deliver quality biology instruction, potentially impacting student learning outcomes.

Here's a more detailed look at some of the key issues:

1. RESOURCE CONSTRAINTS:

Lack of Laboratories:
Many schools lack well-equipped laboratories, making it difficult for teachers to conduct practical demonstrations and experiments, which are crucial for understanding complex biological concepts.

Insufficient Textbooks:
Inadequate access to prescribed textbooks and other learning materials can limit students' ability to engage with the subject matter.

Overcrowded Classrooms:
Large class sizes make it challenging for teachers to individualize instruction and effectively address the needs of diverse learners.

2. TEACHER TRAINING AND PROFESSIONAL DEVELOPMENT:

Lack of Specialized Training:
Some biology teachers may lack the necessary expertise in specific areas of biology, particularly practical skills and newer teaching methodologies.
Limited Professional Development Opportunities:
Inadequate opportunities for teachers to engage in professional development, including workshops and seminars, can hinder their ability to stay up-to-date on new research and teaching techniques.

3. STUDENT ENGAGEMENT AND MOTIVATION:

Lack of Interest:
Some students may not be intrinsically motivated to learn biology, potentially due to a lack of understanding of the subject's relevance to their lives or career aspirations.
Poor Learning Environment:
A lack of a conducive learning environment, including a supportive classroom atmosphere and access to adequate resources, can further hinder student engagement and motivation.

4. OTHER CONTRIBUTING FACTORS:

Curriculum Constraints:
The curriculum itself may not be designed to effectively integrate practical learning and hands-on activities, limiting student engagement.
Examination Pressures:
The emphasis on standardized testing can sometimes lead to a focus on rote memorization rather than conceptual understanding.
Infrastructural Deficiencies:
Basic infrastructure issues, such as inadequate electricity, water, and sanitation, can also impact the teaching and learning environment.

5. ADDRESSING THE CHALLENGES:

Increased Investment in Resources:
Schools need to invest in well-equipped laboratories, libraries, and instructional materials to support effective biology instruction.
Targeted Professional Development:
Teachers should receive specialized training in areas like practical teaching methodologies, ICT integration, and curriculum development.
Promoting Student Engagement:

Teachers can use various strategies, including hands-on activities, real-world examples, and technology, to make biology more engaging for students.

Curriculum Reform:

Curriculum developers should incorporate more practical learning and hands-on experiences into biology courses.

Addressing Infrastructure Deficiencies:

Schools need to address basic infrastructure issues to create a more conducive learning environment.

Objectives of the Study

The purpose these researches are as follows:

i. To highlight and discuss the relevance of well-equipped laboratory to the teaching of biology in the secondary schools.
ii. To identify the impact of regular test/assessments both practical tests and problems type tests on students' proficiency in biology.
iii. To ascertain the effect of the use of professional biology teachers (resources teachers) on the teaching of biology in secondary schools.

Effective Teaching of Biology

The effective teaching of biology is a process by which biology teachers adopt all the possible methods used in teaching in the classroom to make sure that students understand biology and able to respond positively during assessment or to produce a good result (Ezeobi, 2016). She stated that teachers effectiveness is exhibited in the teaching method, classroom management, material as well as the way students are been handled, a good teacher always bear in mind the individual differences of the students while presenting the lesson and frequently check the students understanding of his or her point to make sure that they are understanding her lesson. This also includes the ability of the teacher to answer questions asked by the students, having knowledge about his or her subject matter and ability to show students how to conduct appropriate researches. Effective teaching is crucial in other for students to reach educational success in and outside classroom setting (Ezeobi, 2016).

According to Cambridge Dictionary, the term "Biology" is derived from two Greek word "bios" and "logos" which means "life" and "study" respectively. Biology therefore means the study of life or study of living things. It is also a natural science concerned with the study of life and living organisms, function, growth, evolution, origin and taxonomy. Ango (2009) stated that biology have several branches, including Botany-the study of plants, zoology – the study of animals, morphology – the study of the external structure of living things, physiology – the study of how living things function, Ecology – the study of the relationship between living things and there environment, Genetics- the study of how living things inherit characters from their parents, cell biology – the study of cell structure and functions. Students who did well in biology could have prospects of becoming doctors, nurses, pharmacists, dentists, biology teachers, medical technologists, food technologists, genetic engineers, microbiologists, biochemist and other biology related disciplines.

Fortunately, it is a fact that biology is the commonly closer science subject of most secondary students is confined by the West African Examination Council (WAEC) by biology Chief Examiner (2018). The state of teaching and learning of biology in some of

the secondary schools in Andhra Pradesh is fast deteriorating due to ineffective planning of lessons. Thus, students become passive towards the learning of biology. As such it becomes imperative to reappraise extent of effective planning of instruction in the teaching and learning of biology in secondary schools in A.P. state. The most pressing problems carefully considered in this study were does effective planning of instruction have an extent in the teaching and learning of biology? If they do, how do we go about planning effectively to achieve the desired aim.

FACTORS MILITATING AGAINST THE EFFECTIVE TEACHING AND LEARNING OF BIOLOGY

1.Poor Planning

The effecting planning of instruction makes for effective teaching and learning but when it is poor, the effects are dire. It leads to aimless wandering of the teaching, failure in achieving the objectives of the lesson, poor connection with a preceding lessons, poor or ineffective learning, frustrations for both the teacher and students, waste of time, efforts and resources as the stated aims are not achieved (Azubuike, Nwakonobi, Chikobi & Onwuachu, 2012). In using Lecture Method, the teacher reads out his already prepared lesson. He may or may not explain some technical terms in the note. He basically will not give the students insight to what he is inferring to but gives them right ups or handouts to read up. Njoku (2004) was of the view that lecture method of teaching involves more talking than doing, the average student that learns under this method is unable to express him or herself adequately. A good biology teacher is expected to use scientific problems that emphasizes appropriate methods such as discovery, inquiry activity, demonstration, projects which if judiciously employed by the teacher, will lead to the acquisition of those skills which are the bed rock of scientific method. Performances in biology at secondary school level remain poor and one reason is that the teaching adopted by the teachers which is teacher – centered approaches is being predominant (Azubike et al, 2012).

2.Lack of Suitable Instruments or Materials

The classroom teaching and learning demands a lot of materials for arousing or motivating interest of learners for concretizing learning experience, retention and transfer of knowledge. According to Abdullahi (2010) instructional materials are tools locally made or imported that help to facilitate the teaching and learning processes. Abdullahi view them as material things which could make tremendous enhancement of intellectual learning. Osuala (2010) summarized the role of teaching aid as follows:

1. It promotes meaningful communication and effective learning.
2. They ensure better retention, thus making learning more permanent.
3. They help to overcome the limited classroom by making the inaccessible accessible.
4. They provide a common experience upon which late learning can be developed.
5. They stimulate and motivate students to learn.
6. They encourage participation especial if students are allowed to manipulate materials used.

3.Poor Method of Teaching

The primary aim of teaching at any level of education is to bring a fundamental change in the learner (Tebalal & Kahssay, 2011). To facilitate the process of knowledge transmission, teachers should apply appropriate teaching methods that best suit specific objectives and level of existing outcomes. According to Ayeni (2011) teaching is a

continuous process that involves bringing about desirable changes in learners through the use of appropriate methods. Adeola (2011) indicated that in order to bring a desirable charge in students, teaching methods used by educators should be best for the subject matter. Furthermore, teaching methods work effectively mainly if they suit learner's needs since every learner interprets and responds to questions in a unique way. Ayeni (2011) stated that method is a way in which you organize and present learning materials to students. Method of teaching has a great role in teaching-learning process and it contributes a lot for effective teaching and learning. The way it is used is important in helping students acquire the basic scientific knowledge, skills and attitude to solve different problems in life. Ayeni (2011) further stated that biology as a science subject involves teachers using methods that will give students opportunity to be actively involved. It is a well-known fact that no skilled teacher used just one method of teaching. The two basic types of instructional methods are the teacher-centered and the students-centered. Teacher centered instruction approaches are traditional and students acquire knowledge by listening to the teacher and by reading a textbook or books. In such an approach, the student is a passive recipient of information. In secondary schools, most common teaching method is lecturing and reading textbooks and when it comes to interactions, teachers only ask closed questions like "Yes or No" to check whether the students have memorized the information contained in the textbook (Ayeni, 2011).

Population of the Study

According to Udoyen (2019), a study population is a group of elements or individuals as the case may be, who share similar characteristics. These similar features can include location, gender, age, sex or specific interest. The emphasis on study population is that it constitutes of individuals or elements that are homogeneous in description.

This study was carried to examine Problem hindering the effective teaching of biology in the secondary schools. Selected secondary schools in Andhra Pradesh state forms the population of the study.

This study was on Problem hindering the effective teaching of biology in the secondary schools. Three objectives were raised which included;
To highlight and discuss the relevance of well-equipped laboratory to the teaching of biology in the secondary schools,
to identify the impact of regular test/assessments both practical tests and problems type tests on students' proficiency in biology and to ascertain the effect of the use of professional biology teachers (resources teachers) on the teaching of biology in secondary schools.

A total of 77 responses were received and validated from the enrolled participants where all respondents were drawn from selected secondary schools in Andhra Pradesh state.

Hypothesis was tested using Chi-Square statistical tool (SPSS).

Recommendations

1. Subjects teachers should make lesson planning their priority. Do not conduct a lesson unplanned especially in biology.

2. Curriculum planners should consider the demands of the society, individual differences, age of the students and also availability of instructional materials that will better suit the curriculum while planning.
3. The government should equip schools will all the necessary materials for learning, also increase the time allocated for science courses especially biology.
4. Time management is very important, so both teachers and students should be conscious of time in all the school activities.

Conclusion

In conclusion, the need to under see the extent of factors militating against effective teaching and learning of biology. It makes it easier for both the teacher and the students in achieving the objectives of the lesson (Lacina & Block, 2011). All hands should be on deck, including the school authorities, curriculum planners, government, students, parents and the society at large should help biology teachers in making provisions for all the factors which hinder the teaching and learning of biology in secondary schools which are unequipped biology laboratory, lack of instructional materials etc. It is believed that if these goals are achieved, the teaching and learning of biology will be more effective and students will do better in their internal and external examinations both presently and in future (Biology Chief Examiner, 2018).

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